

Abstract of the Invention

An image sensor device and method for forming the same include a photodiode formed in a substrate, at least one electrical interconnection line electrically associated with the photodiode, a light passageway having a light inlet, the light passageway being positioned in alignment with the photodiode, a color filter positioned over the light inlet of the light passageway and a lens positioned over the color filter in alignment with the light passageway wherein the at least one electrical interconnection line includes a copper interconnection formation having a plurality of interlayer dielectric layers in a stacked configuration with a diffusion barrier layer between adjacent interlayer dielectric layers, and a barrier metal layer between the copper interconnection formation and the plurality of interlayer dielectric layers and intervening diffusion barrier layers. An image sensor device may employ copper interconnections if a barrier metal layer is removed from above a photodiode.